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10/084,879	10/18/2001	Georgios Karagiannis	P15234-US2	7269
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ERICSSON INC. 6300 LEGACY DRIVE M/S EVR 1-C-11 PLANO, TX 75024			WON, MICHAEL YOUNG	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/084,879

Applicant(s)

KARAGIANNIS ET AL.

Examiner

Michael Y. Won

Art Unit

2155

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 and 33-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 and 33-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This action is in response to the amendment filed May 7, 2007.
2. Claims 1, 22, and 36 have been amended.
3. Claims 1-31 and 33-46 have been examined and are pending with this action.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims, 1, 22, and 36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The provisional application (60/241,539) on page 39 does teach "at the same time", however this citation does not support the limitation of "issuing, at the same time, two registration reply messages, one from the base node to the mobile node... via the new sub-network router... and a deregistration reply message is sent from the base node... via the old sub-network

router notifying the mobile node" as recited in the amended language of claims 1, 22, and 36. The citation of the provisional application discusses sending a registration reply message from a Home Agent to the Mobile Node via the new Foreign Agent and "at the same time" sending a BU (binding update) to the CN (correspondent node). The "BU" is not the same as "deregistration reply message" and the "CN" is not the same as a mobile node. Clearly, the citation does not support the amended claim limitation.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1–31 and 33–46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 6,539,225 B1) in view of Tiedemann, Jr. et al. (US 5,870,427 A) and C. E. Perkins et al. "Route Optimization in Mobile IP", draft-ietf-mobileip-optim-08.txt (Feb. 25, 1999).

#### **INDEPENDENT:**

As per **claim 1**, Lee teaches a method of handing off a mobile node from an old sub-network router to a new sub-network router in an Internet Protocol based wireless access network (see col.2, lines 34-44 and col.4, lines 14-19), comprising:

obtaining a new care-of address for the mobile node from the new sub-network router (see col.5, lines 27-31: "to establish the address of the New Foreign Agent 34 as a new care-of address");

sending a request message from the mobile node to a base node via the new sub-network router requesting a new binding (see col.5, lines 27-36: "registration is invoked (by either the mobile wireless node");

creating a new care-of address binding in the base node (see col.4, lines 50-54 and col.5, lines 31-36: "the home agent 26 establishes a mobility binding between the mobile wireless node's home address and the new care-of-address");

issuing, at the same time, two registration reply messages (see col.6, lines 27-29: "implement registration and de-registration"), one from the base node to the mobile node wherein a registration reply message is sent to the new care-of address via the new sub-network router indicating that the new care-of address binding has been created (see Fig.3, step S4-S5 and col.5, lines 33-36: "the home agent 26 establishes a mobility binding between the mobile wireless node's home address and the new care-of-address") and a deregistration reply message is sent from the base node to the old care-of address via the old sub-network router notifying the mobile node that the binding with the old care-of address has been removed (see Fig.3, step S6 and col.6, lines 2-4: "The Old Foreign Agent 28 is then de-registered by the home agent 26"); and

utilizing the deregistration reply message to synchronize a transfer of old care-of address data packets stored on the old sub-network to the mobile node (implicit: see col.5, line 53-56: "When handoff... actually occurs... the communication content from

the home agent 26 is immediately available at the New BSS 24" and col.7, lines 62-67: "de-registered at said home agent from receiving said packetized communication content via said first care-of data network address").

Although Lee teaches of a lower layer complying with OSI (Open Systems Interconnection) model (see col.4, lines 46-48); and using information from the lower layer (see col.4, lines 66-67) of the OSI model, Lee does not explicitly teach of obtaining a handoff starting time.

Tiedemann, Jr. teaches of obtaining a handoff starting time (see col.8, lines 43-47).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the system of Lee in view of Tiedemann, Jr. so that a handoff start time will be obtained. One would be motivated to do so because this allows coordination to occur such that gaps are not created which "interrupt the timely delivery of call content, which can degrade communication quality" (see Lee: col.2, lines 15-19).

Lee does not explicitly teach of notifying to the mobile node that a connection with the old sub-network router will be discarded within a predetermined amount of time

Perkins teaches of notifying to the mobile node that a connection with the old sub-network router will be discarded within a predetermined amount of time (see Pg.3, 3.1.*Binding Caches*, 4<sup>th</sup> paragraph: "each binding in the binding cache also has an associated lifetime, specified in the Binding Update message in which the node obtains the binding. After the expiration of this time, the binding is deleted from the cache").

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the system of Lee in view of Perkins so that mobile node will be notified that a connection with the old sub-network router will be discarded within a predetermined amount of time. One would be motivated to do so because this would allow the mobile node to know that they are leaving one network for another (roaming).

As per **claim 22**, Lee teaches of an Internet Protocol based wireless access network (see col.2, lines 34-44 and col.4, lines 14-19), comprising:

a mobile node adapted to obtain a new care-of address from a new sub-network router (see col.5, lines 27-31: "to establish the address of the New Foreign Agent 34 as a new care-of address") and to issue a request message via the new sub-network router requesting a new binding (see col.5, lines 27-36: "registration is invoked (by either the mobile wireless node"); and

a base node adapted to create the new care-of address binding upon receiving the request message from the mobile node (see col.4, lines 50-54 and col.5, lines 31-36: "the home agent 26 establishes a mobility binding between the mobile wireless node's home address and the new care-of-address") and to issue, at the same time, two registration reply message being sent to both the old sub-network router and the new sub-network router (see col.6, lines 27-29: "implement registration and de-registration"), including

a registration reply message to the mobile node via the new sub-network router indicating that the new care-of address binding has been created (see Fig.3, step S4-S5

and col.5, lines 33-36: "the home agent 26 establishes a mobility binding between the mobile wireless node's home address and the new care-of-address"), wherein the base node is adapted to delete an old care-of address binding therefrom upon receiving a deregistration re-request message (see col.5, line 38: "terminate (de-register)" and col.6, lines 2-4) and

a deregistration binding acknowledgement message to the mobile node via old sub-network router indicating that the old care-of address binding has been deleted (see Fig.3, step S6 and col.6, lines 2-4: "The Old Foreign Agent 28 is then de-registered by the home agent 26"); wherein

the mobile node and the base node are further adapted to utilize the deregistration reply message to synchronize the transfer of old care-of address data packets stored on the old sub-network router from the base node to the mobile node in a synchronized manner (implicit: see col.5, line 53-56: "When handoff... actually occurs... the communication content from the home agent 26 is immediately available at the New BSS 24" and col.7, lines 62-67: "de-registered at said home agent from receiving said packetized communication content via said first care-of data network address").

Although Lee teaches of a lower layer complying with OSI (Open Systems Interconnection) model (see col.4, lines 46-48); and using information from the lower layer (see col.4, lines 66-67) of the OSI model, Lee does not explicitly teach of obtaining a handoff starting time.



Tiedemann, Jr. teaches of obtaining a handoff starting time (see col.8, lines 43-47).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the system of Lee in view of Tiedemann, Jr. so that a handoff start time will be obtained. One would be motivated to do so because this allows coordination to occur such that gaps are not created which "interrupt the timely delivery of call content, which can degrade communication quality" (see Lee: col.2, lines 15-19).

Lee does not explicitly teach of notifying to the mobile node that a connection with the old sub-network router will be discarded within a predetermined amount of time

Perkins teaches of notifying to the mobile node that a connection with the old sub-network router will be discarded within a predetermined amount of time (see Pg.3, 3.1.*Binding Caches*, 4<sup>th</sup> paragraph: "each binding in the binding cache also has an associated lifetime, specified in the Binding Update message in which the node obtains the binding. After the expiration of this time, the binding is deleted from the cache").

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the system of Lee in view of Perkins so that mobile node will be notified that a connection with the old sub-network router will be discarded within a predetermined amount of time. One would be motivated to do so because this would allow the mobile node to know that they are leaving one network for another (roaming).

As per **claim 36**, Lee teaches a method of handing off a mobile node from an old sub-network router to a new sub-network router in an Internet Protocol based wireless access network (see col.2, lines 34-44 and col.4, lines 14-19), comprising:

obtaining a new care-of address for the mobile node from the new sub-network router (see col.5, lines 27-31: "to establish the address of the New Foreign Agent 34 as a new care-of address");

sending a request message from the mobile node to a base node via the new sub-network router requesting a new binding (see col.4, lines 9-13: "terminating" and "initiating"), the base node being predetermined one of a home agent (see Fig.2, #26 and col.1, lines 47-55), a gateway foreign agent (see col.1, lines 47-51 and col.4, lines 48-50), and a mobility anchor point (see Fig.2: via home agent; col.1, line 63 to col.2, line 1; and col.4, lines 62-67);

creating a new care-of address binding in the base node (see col.4, lines 50-54 and col.5, lines 31-36: "the home agent 26 establishes a mobility binding between the mobile wireless node's home address and the new care-of-address");

issuing, at the same time, two registration reply messages from the base node to the mobile node to both the old sub-network router and the new sub-network router (see col.6, lines 27-29: "implement registration and de-registration");

a registration reply message via the new sub-network router indicating that the new care-of address binding has been created (see Fig.3, step S4-S5 and col.5, lines 33-36: "the home agent 26 establishes a mobility binding between the mobile wireless node's home address and the new care-of-address") and

a deregistration reply message via the old sub-network router indicating that the old care-of address has been deleted (see Fig.3, step S6 and col.6, lines 2-4: "The Old Foreign Agent 28 is then de-registered by the home agent 26"); and

utilizing the deregistration reply message to synchronize a transfer of old care-of address data packets stored on the old sub-network router from the base node to the mobile node (implicit: see col.5, line 53-56: "When handoff... actually occurs... the communication content from the home agent 26 is immediately available at the New BSS 24" and col.7, lines 62-67: "de-registered at said home agent from receiving said packetized communication content via said first care-of data network address").

Although Lee teaches of a lower layer complying with OSI (Open Systems Interconnection) model (see col.4, lines 46-48); and using information from the lower layer (see col.4, lines 66-67) of the OSI model, Lee does not explicitly teach of obtaining a handoff starting time.

Tiedemann, Jr. teaches of obtaining a handoff starting time (see col.8, lines 43-47).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the system of Lee in view of Tiedemann, Jr. so that a handoff start time will be obtained. One would be motivated to do so because this allows coordination to occur such that gaps are not created which "interrupt the timely delivery of call content, which can degrade communication quality" (see Lee: col.2, lines 15-19).

Lee does not explicitly teach of notifying to the mobile node that a connection with the old sub-network router will be discarded within a predetermined amount of time

Perkins teaches of notifying to the mobile node that a connection with the old sub-network router will be discarded within a predetermined amount of time (see Pg.3, 3.1. *Binding Caches*, 4<sup>th</sup> paragraph: "each binding in the binding cache also has an associated lifetime, specified in the Binding Update message in which the node obtains the binding. After the expiration of this time, the binding is deleted from the cache").

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the system of Lee in view of Perkins so that mobile node will be notified that a connection with the old sub-network router will be discarded within a predetermined amount of time. One would be motivated to do so because this would allow the mobile node to know that they are leaving one network for another (roaming).

**DEPENDENT:**

As per **claims 2, 23, and 37**, Lee further teaches wherein the request message is a mobile node registration request message (see col.4, lines 14-19 and col.6, lines 22-29) and the reply message is a mobile node registration reply message (see claim 1 rejection above).

As per **claims 3, 31, and 42**, Lee further teaches further teaches wherein the base node is a home agent (see Fig.2, #26 and col.1, lines 47-55) and the mobile node is capable of accessing two sub-networks simultaneously (see col.5, lines 36-47 and col.5, line 67 to col.6, line 5), the synchronizing step comprising: deleting an old care-of

address binding from the home agent (see col.5, lines 36-40: "prior art systems" and col.6, lines 2-5); and issuing a deregistration reply message from the home agent to the mobile node via the old sub-network router indicating that the old care-of address binding has been deleted (see claim 1 rejection above and col.5, lines 36-41 and col.5, line 67 to col.6, line 5).

As per **claims 4, 33, and 44**, Lee does not explicitly teach wherein the mobile node does not receive the deregistration reply message before a predetermined time, the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router; creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address; issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router; and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address.

Perkins teaches wherein the mobile node does not receive the deregistration reply message before a predetermined time (see pg.14, *5.1.Previous Foreign Agent Notification Extension*, 2<sup>nd</sup> paragraph: "Cache Lifetime"), the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router (see pg.5, *3.2.Foreign Agent Smooth Handoff*, 3<sup>rd</sup> and 5<sup>th</sup> paragraphs); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see pg.5, *3.2.Foreign Agent Smooth Handoff*, 3<sup>rd</sup> paragraph); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see pg.5, *3.2.Foreign Agent*

*Smooth Handoff*, 5<sup>th</sup> paragraph); and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see pg4-pg.5, 3.2.*Foreign Agent Smooth Handoff*, 2<sup>nd</sup> and 3<sup>rd</sup> paragraphs).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Perkins within the system of Lee by implementing the steps set forth above within the Internet Protocol based mobile node handoff system because such steps notifies the old foreign agent that the mobile node has moved, deletes stale data, and allows received data directed to mobile node to be redirected to the proper current foreign agent.

As per **claim 5**, Lee and Perkins further teach wherein the base node is a home agent (see Lee: Fig.2, #26 and col.1, lines 47-55) and the mobile node is capable of accessing only a single sub-network at a time (see Lee: col.5, lines 36-41: "prior art"), the synchronizing step comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above); deleting an old care-of address binding from the home agent (see claim 3 rejection above); and issuing a deregistration reply message from the home

agent to the mobile node via the old sub-network router indicating that the old care-of address binding has been deleted (see claim 3 rejection above).

As per **claims 6, 34, 35, 45 and 46**, Lee further teaches wherein a route optimization function is used (see abstract), the base node is a home agent (see Fig.2, #26 and col.1, lines 47-55), and the mobile node is capable of accessing two sub-networks simultaneously (see col.5, lines 36-47 and col.5, line 67 to col.6, line 5).

Lee does not explicitly teach wherein the synchronizing step comprising: sending a deregistration binding update message from the mobile node to a correspondent node via the old sub-network router; deleting an old care-of address binding from the correspondent node; issuing a deregistration binding acknowledgment message from the correspondent node to the mobile node via the old sub-network router; sending a binding update message from the home agent to the correspondent node; and creating a new care-of address binding in the correspondent node.

Perkins teaches of steps comprising: sending a deregistration binding update message from the mobile node to a correspondent node via the old sub-network router (pg.3, 3.1.*Binding Caches*, 2<sup>nd</sup> paragraph); deleting an old care-of address binding from the correspondent node (inherent); issuing a deregistration binding acknowledgment message from the correspondent node to the mobile node via the old sub-network router (see claim 1 rejection above); sending a binding update message from the home agent to the correspondent node (see pg.3, 3.1.*Binding Caches*, 4<sup>th</sup> paragraph); and creating a new care-of address binding in the correspondent node (pg.3, 3.1.*Binding Caches*, 3<sup>rd</sup> paragraph).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Perkins within the system of Lee by implementing the steps set forth with a corresponding node to bypass the home node within the method of handing off a mobile node from an old sub-network router to a new sub-network router in an Internet Protocol based wireless access network because “triangular routing” “delays the delivery of the datagrams to mobile nodes, places an unnecessary burden on the networks and routers along their paths through the Internet” (see pg.1, *1.Introduction*, 2<sup>nd</sup> paragraph)

As per **claim 7**, Lee and Perkins further teaches wherein the mobile node does not receive the deregistration binding acknowledgement message before the old wireless sub-network has deteriorated beyond a certain point (see claim 1 rejection above), the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above).

As per **claim 8**, Lee and Perkins further teaches wherein a route optimization function is used (see Lee: abstract), the base node is a home agent (see Lee: Fig.2, #26 and col.1, lines 47-55), and the mobile node is capable of accessing only a single



sub-network at a time (see Lee: col.5, lines 36-41: "prior art"), the synchronizing step comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above); sending a binding update message from the home agent to a correspondent node (see claim 6 rejection above); and creating a new care-of address binding in the correspondent node (see claim 6 rejection above).

As per **claim 9**, Lee further teaches wherein the base node is a gateway foreign agent (see col.1, lines 47-51 and col.4, lines 48-50) and the mobile node is capable of accessing two sub-networks simultaneously (see col.5, lines 36-47 and col.5, line 67 to col.6, line 5), the synchronizing step comprising: deleting an old care-of address binding from the gateway foreign agent (see claim 3 rejection above); and issuing a deregistration reply message from the gateway foreign agent to the mobile node via the old sub-network router indicating that the old care-of address binding has been deleted (see claim 3 rejection above).

As per **claim 10**, Lee and Perkins further teaches wherein the mobile node does not receive the deregistration binding acknowledgment message before a predetermined time (see claim 1 rejection above), the synchronizing step further

comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above).

As per **claim 11**, Lee and Perkins further teaches wherein the base node is a gateway foreign agent (see Lee: col.1, lines 47-51 and col.4, lines 48-50), and the mobile node is capable of accessing only a single sub-network at a time (see Lee: col.5, lines 36-41: "prior art"), the synchronizing step comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above); deleting an old care-of address binding from the gateway foreign agent (see claim 3 rejection above); and issuing a deregistration reply message from the gateway foreign agent to the mobile node via the old sub-network router indicating that the old care-of address binding has been deleted (see claim 3 rejection above).

As per **claims 12, 24, and 38**, Lee and Perkins further teach wherein the request message is a binding update message (see Lee: col.4, lines 41-43 & 50-54; and col.5, lines 26-36) and the reply message is a binding acknowledgment message (see claim 1 rejection above).

As per **claims 13 and 43**, Lee further teach wherein the base node is a home agent (see Fig.2, #26 and col.1, lines 47-55) and the mobile node is capable of accessing two sub-networks simultaneously (see col.5, lines 36-47 and col.5, line 67 to col.6, line 5), the synchronizing step comprising issuing: sending a deregistration binding update message from the mobile node to the home agent via the old sub-network router (see col.6, lines 22-29); deleting an old care-of address binding from the home agent (see claim 3 rejection above); and sending a deregistration reply or deregistration binding acknowledgment message from the home agent to the mobile node via the old sub-network router indicating that the old care-of address binding has been deleted (see claim 3 rejection above).

As per **claim 14**, Lee and Perkins further teaches wherein the mobile node does not receive the deregistration reply message before the old wireless sub-network has badly deteriorated beyond a certain point (see claim 1 rejection above), the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgement message from the old sub-network router to the mobile node via the new sub-network

router (see claim 4 rejection above); and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above).

As per **claim 15**, Lee and Perkins further teaches wherein the base node is a home agent (see Lee: Fig.2, #26 and col.1, lines 47-55) and the mobile node is capable of accessing only a single sub-network at a time (see Lee: col.5, lines 36-41: "prior art"), the synchronizing step comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgement message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above); sending a deregistration binding update message from the mobile node to the home agent via the old sub-network router (see claim 13 rejection above); deleting an old care-of address binding from the gateway foreign agent (see claim 3 rejection above); and issuing a deregistration reply message from the gateway foreign agent to the mobile node via the old sub-network router indicating that the old care-of address binding has been deleted (see claim 3 rejection above).

As per **claim 16**, Lee and Perkins further teaches wherein a route optimization function is used (see Lee: abstract), the base node is a home agent (see Lee: Fig.2, #26 and col.1, lines 47-55), and the mobile node is capable of accessing two sub-

networks simultaneously (see Lee: col.5, lines 36-47 and col.5, line 67 to col.6, line 5), the synchronizing step comprising: sending a deregistration binding update message from the mobile node to a correspondent node via the old sub-network router (see claim 6 rejection above); deleting an old care-of address binding in the correspondent node (see claim 6 rejection above); issuing a deregistration binding acknowledgment message from correspondent node to the mobile node via the old sub-network router (see claim 6 rejection above); sending a binding update message from the mobile node to the correspondent node via the new sub-network router (see pg.2, 2. *Terminology*, "Binding update"); creating a new care-of address binding in the correspondent node (see claim 6 rejection above); and issuing a binding acknowledgment message from the correspondent node to the mobile node via the new sub-network router (see pg.11, 4.4. *Binding Acknowledge Message*, 1<sup>st</sup> paragraph).

As per **claim 17**, Lee and Perkins further teaches wherein the mobile node does not receive the deregistration binding acknowledgment message before the old wireless sub-network has deteriorated beyond a certain point (see claim 7 rejection above), the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); and forwarding old care-of address data packets

stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above).

As per **claim 18**, Lee and Perkins further teaches wherein a route optimization function is used, the base node is a home agent (see Lee: Fig.2, #26 and col.1, lines 47-55), and the mobile node is capable of accessing only a single sub-network at a time (see Lee: col.5, lines 36-41: "prior art"), the synchronizing step comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above); sending a binding update message from the mobile node to the correspondent node via the new sub-network router (see claim 16 rejection above); creating a new care-of address binding in the correspondent node (see claim 6 rejection above); and issuing a binding acknowledgment message from the correspondent node to the mobile node via the new sub-network router (see claim 16 rejection above).

As per **claim 19**, Lee further teach wherein the base node is a mobility anchor point (see Fig.2: via home agent; col.1, line 63 to col.2, line 1; and col.4, lines 62-67) and the mobile node is capable of accessing two sub-networks simultaneously (see col.5, lines 36-47 and col.5, line 67 to col.6, line 5), the synchronizing step comprising:

sending a deregistration binding update message from the mobile node to the mobility anchor point via the old sub-network router (see claim 13 rejection above); deleting an old care-of address binding from the mobility anchor point (see claim 3 rejection above); and issuing a deregistration binding acknowledgment message from the mobility anchor point to the mobile node via the old sub-network router (see claim 3 rejection above).

As per **claim 20**, Lee and Perkins further teach wherein the mobile node does not receive the deregistration binding acknowledgment before the old wireless sub-network has deteriorated beyond a certain point (see claim 7 rejection above), the synchronizing step further comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); and forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above).

As per **claim 21**, Lee and Perkins further teach wherein the base node is a gateway foreign agent (see Lee: col.1, lines 47-51 and col.4, lines 48-50), and the mobile node is capable of accessing only a single sub-network at a time (see Lee: col.5, lines 36-41: "prior art"), the synchronizing step comprising: sending a binding update message from the mobile node to the old sub-network router (see claim 4 rejection above); creating a binding cache entry in the old sub-network router linking the old care-

of address to the new care-of address (see claim 4 rejection above); issuing a binding acknowledgment message from the old sub-network router to the mobile node via the new sub-network router (see claim 4 rejection above); forwarding old care-of address data packets stored or arriving at the old sub-network router to the new care-of address (see claim 4 rejection above); sending a deregistration binding update message from the mobile node to the mobility anchor point via the old sub-network router (see claim 13 rejection above); deleting an old care-of address binding from the mobility anchor point (see claim 3 rejection above); and issuing a deregistration binding acknowledgment message from the mobility anchor point to the mobile node via the old sub-network router (see claim 3 rejection above).

As per **claims 25 and 39**, Lee further teaches wherein a route optimization function is used (see abstract).

As per **claims 26 and 40**, Lee further teaches wherein the mobile node is capable of accessing two sub-networks simultaneously (see col.5, lines 36-47 and col.5, line 67 to col.6, line 5).

As per **claims 27 and 41**, Lee further teaches wherein the mobile node is capable of accessing only a single sub-network at a time (see col.5, lines 36-41: "prior art").

As per **claim 28**, Lee further teaches wherein the base node is a home agent (see Fig.2, #26 and col.1, lines 47-55).

As per **claim 29**, Lee further teaches wherein the base node is a gateway foreign agent (see col.1, lines 47-51 and col.4, lines 48-50).



As per **claim 30**, Lee further teaches wherein the base node is a mobility anchor point (see Fig.2: via home agent; col.1, line 63 to col.2, line 1; and col.4, lines 62-67).

### ***Response to Arguments***

6. Applicant's arguments filed May 7, 2007 have been fully considered but they are not persuasive.

Although the provisional application (60/241,539) on page 39 does teach "at the same time", this citation does not support the limitation of "issuing, at the same time, two registration reply messages, one from the base node to the mobile node... via the new sub-network router... and a deregistration reply message is sent from the base node... via the old sub-network router notifying the mobile node" as recited in the amended language of claims 1, 22, and 36. The citation of the provisional application discusses sending a registration reply message from a Home Agent to the Mobile Node via the new Foreign Agent and "at the same time" sending a BU (binding update) to the CN (correspondent node). The "BU" is not the same as "deregistration reply message" and the "CN" is not the same as a mobile node. Clearly, the citation does not support the amended claim limitation.

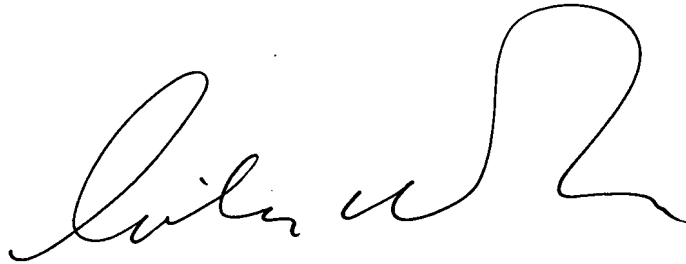
Lee, Tiedemann, Jr. and C. E. Perkins clearly teach all the limitations of claims 1-31 and 33-46.

Claims 1-31 and 33-46 remain rejected and pending with this action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Y. Won whose telephone number is 571-272-3993. The examiner can normally be reached on M-Th: 7AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on 571-272-4006. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Michael Y. Won', with a large, stylized loop at the end.

June 1, 2007